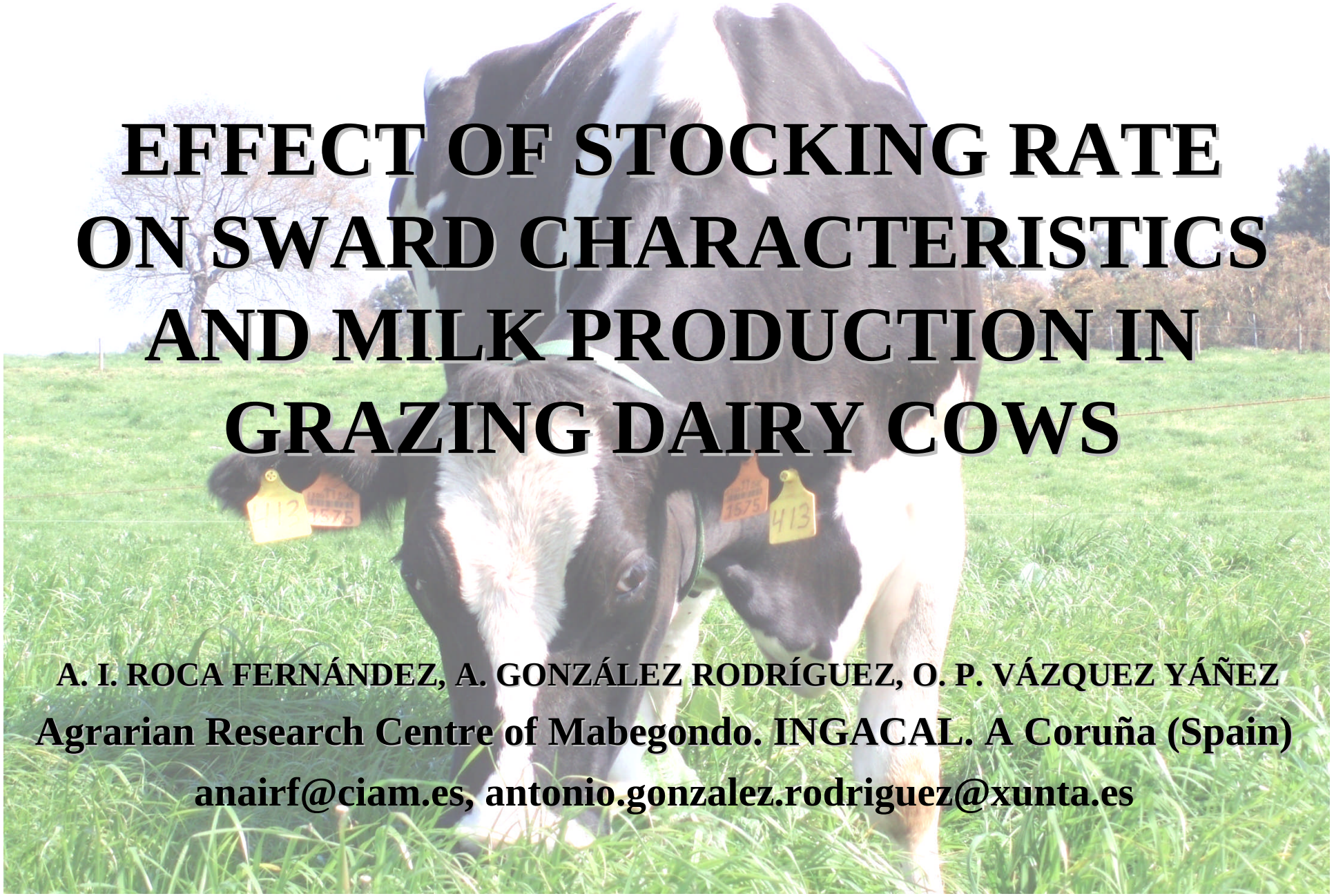

EFFECT OF STOCKING RATE ON SWARD CHARACTERISTICS AND MILK PRODUCTION IN GRAZING DAIRY COWS

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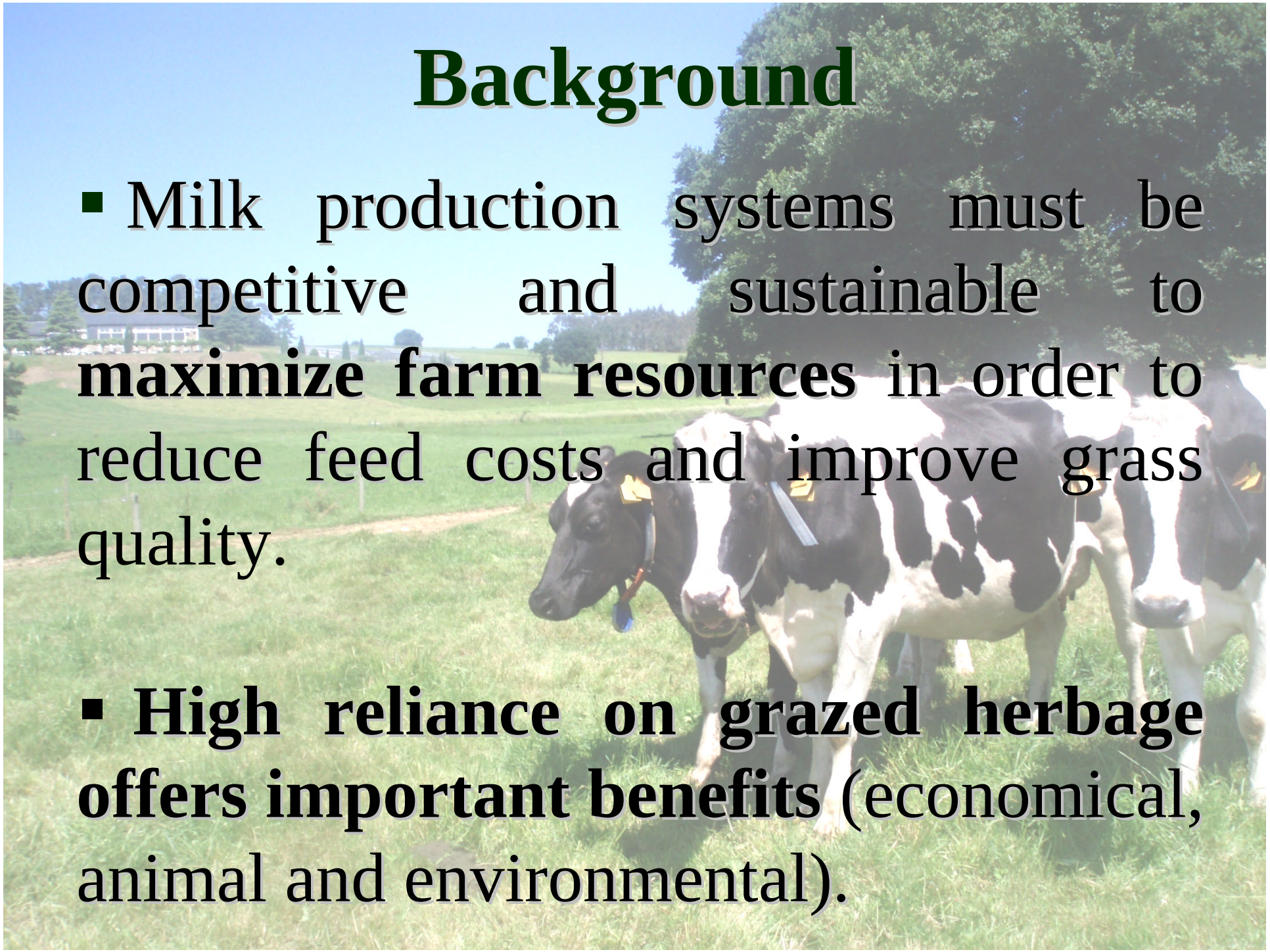
Overview

- Background
- Objective
- Materials and Methods
- Results and Discussion
- Conclusions



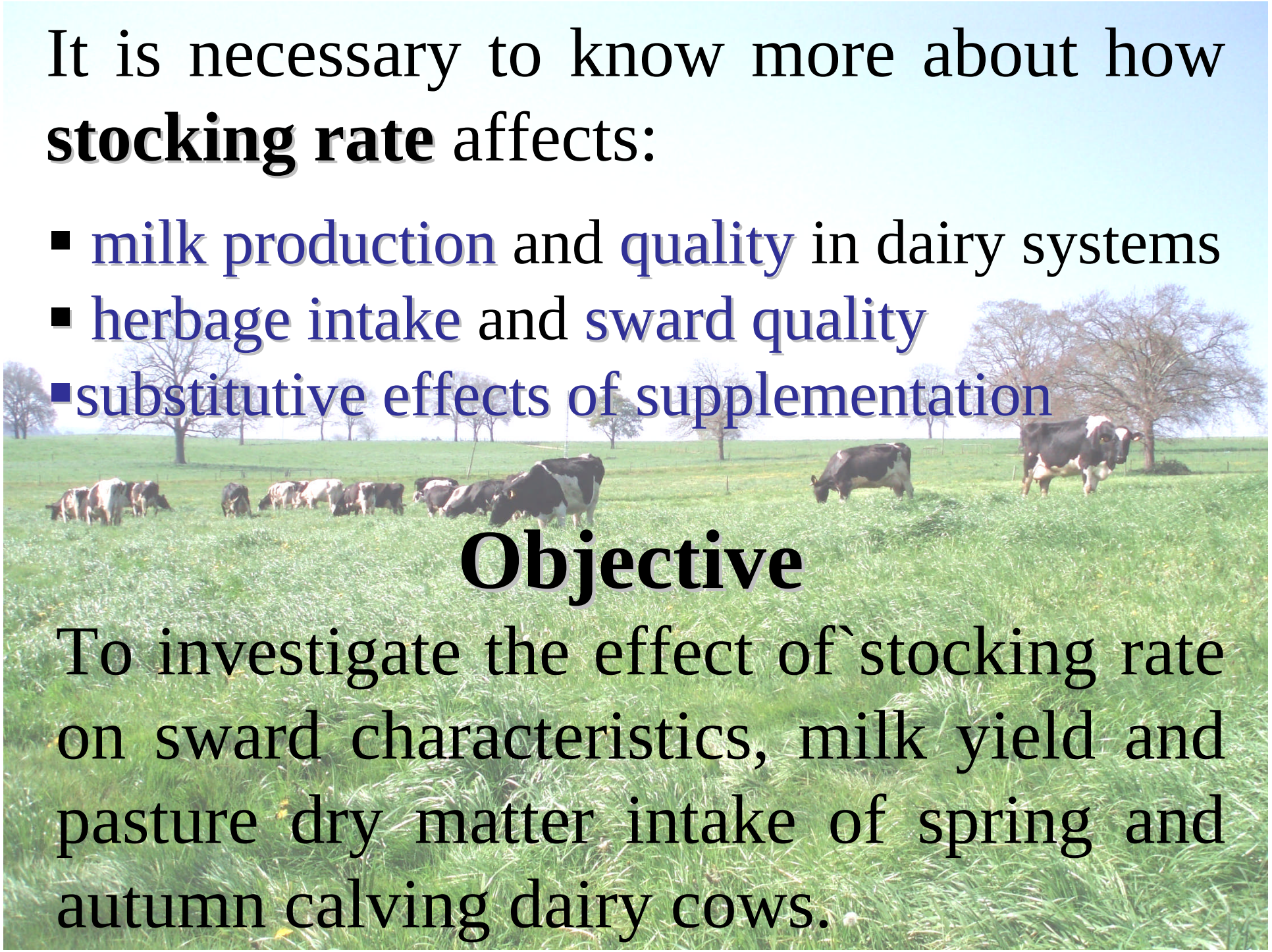
Background

- Milk production systems must be competitive and sustainable to **maximize farm resources** in order to reduce feed costs and improve grass quality.

- **High reliance on grazed herbage offers important benefits** (economical, animal and environmental).

It is necessary to know more about how **stocking rate** affects:

- milk production and quality in dairy systems
- herbage intake and sward quality
- substitutive effects of supplementation



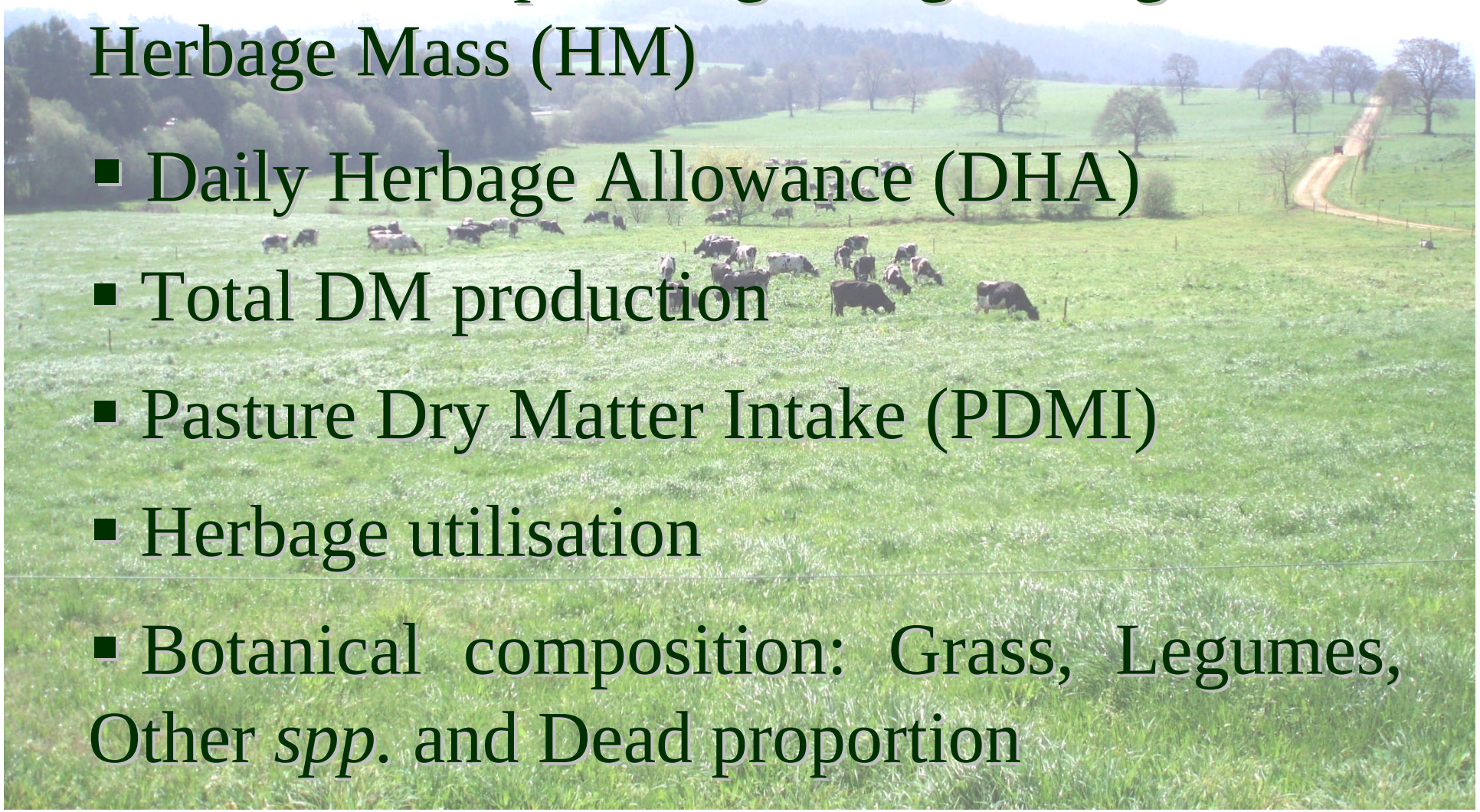
Objective

To investigate the effect of`stocking rate on sward characteristics, milk yield and pasture dry matter intake of spring and autumn calving dairy cows.

Materials and Methods

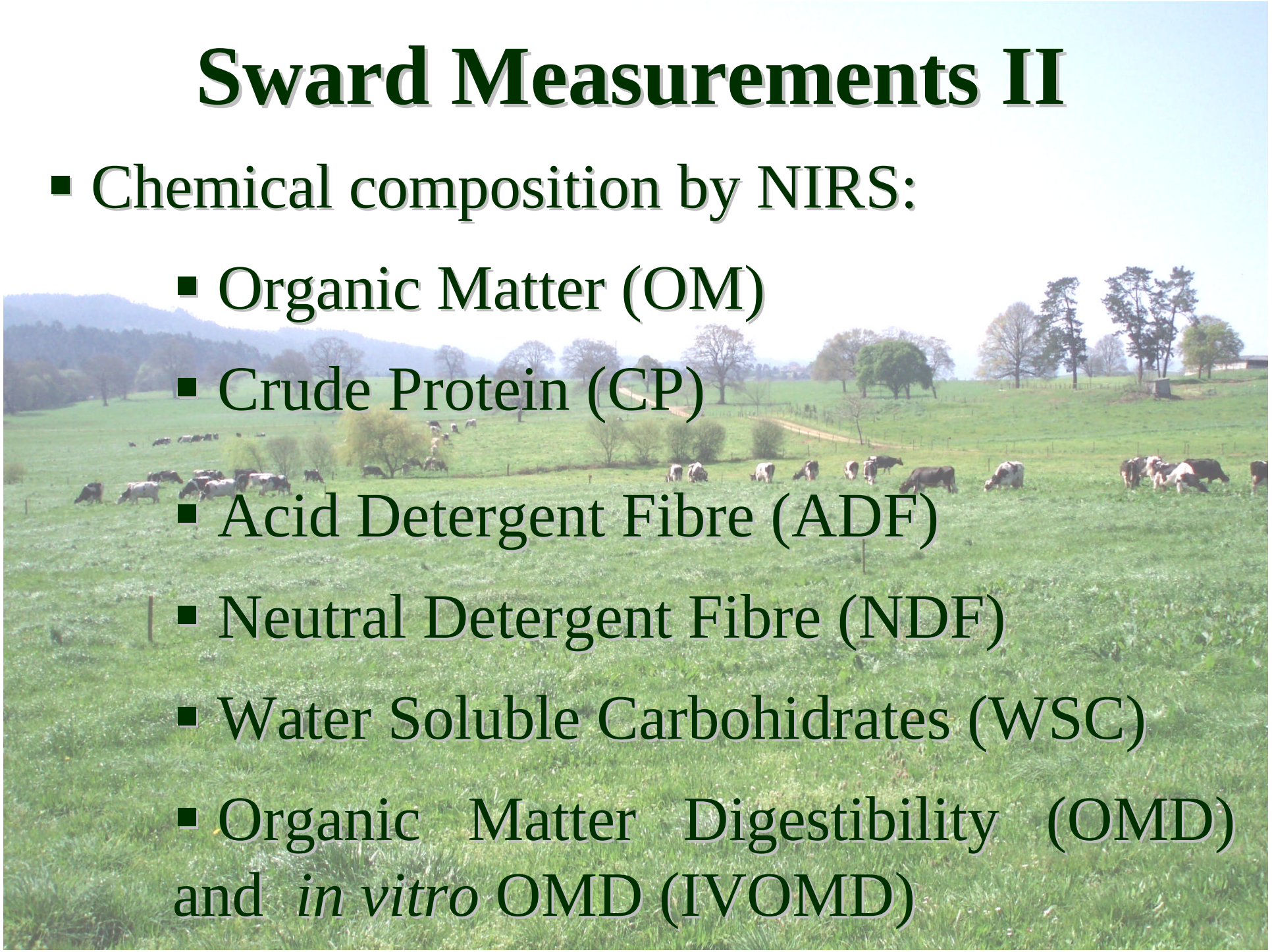
- 4 Grazing Treatments (perennial ryegrass and white clover): 16th March to 2nd August
  - **2 Herds ≠ calving date** (primiparous and multiparous dairy cows):
    - **S,** 44 spring calving (15th February)
    - **A**, 28 autumn calving (30th October)
  - **2 Stocking rates:**
    - **M,** medium (4 cows/ha)
    - **H,** high (6 cows/ha)

Sward Measurements I



- Pre- and post- grazing Height and Herbage Mass (HM)
- Daily Herbage Allowance (DHA)
- Total DM production
- Pasture Dry Matter Intake (PDMI)
- Herbage utilisation
- Botanical composition: Grass, Legumes, Other *spp*. and Dead proportion

Sward Measurements II



- Chemical composition by NIRS:
  - Organic Matter (OM)
  - Crude Protein (CP)
  - Acid Detergent Fibre (ADF)
  - Neutral Detergent Fibre (NDF)
  - Water Soluble Carbohidrates (WSC)
  - Organic Matter Digestibility (OMD) and *in vitro* OMD (IVOMD)

Animal Measurements

- Milk yield (MY)
- Body Weight (BW)
- Body Condition Score (BCS)
- Milk composition by Milkoscan:
  - Fat
  - Protein
  - Urea

Statistical Analysis SPSS 15.00

Results and Discussion

Calving date	Spring		Autumn	
Stocking rate	**Medium**	**High**	**Medium**	**High**
Rotations	4	5	4	5
Days per rotation	32	28	31	29
Area (ha)	5.3^{a}	4.1^{bc}	3.9^{cd}	3.4^{d}
Residence time (days)	1.5^{ab}	1.3^{a}	1.9^{b}	1.7^{ab}
Pre-grazing height (cm)	17.2^{a}	15.9^{ab}	15.7^{ab}	14.6^{b}

High SR: More rotations, lower days per rotation, lower residence time and pre-grazing height.

Results and Discussion

Calving date	Spring		Autumn	
Stocking rate	Medium	High	Medium	High
Stocking rate (cows/ha)	4.3^{a}	5.8^{b}	3.6^{c}	4.6^{a}
Allowance (kg DM/cow)	17^{ab}	15^{ab}	18^{a}	15^{b}
Grass intake (kg DM/cow)	13^{ab}	12^{ab}	14^{a}	10^{b}
Sward utilisation (%)	79	83	77	81
Silage (kg DM/cow)	4	5	5	6
Concentrate (kg DM/cow)	3^{a}	3^{a}	1^{b}	1^{b}

Results and Discussion

Calving date	Spring		Autumn	
Stocking rate	Medium	High	Medium	High
OM (g/kg)	905^{ab}	901^{ab}	906^{a}	899^{b}
CP (g/kg)	128^{a}	138^{ab}	140^{ab}	154^{b}
ADF (g/kg)	310^{a}	291^{b}	299^{ab}	294^{b}
NDF (g/kg)	529^{a}	518^{b}	536^{a}	528^{ab}
WSC (g/kg)	156^{ab}	168^{a}	154^{ab}	146^{b}
OMD (g/kg)	717^{a}	735^{b}	728^{a}	732^{ab}
IVOMD (g/kg)	757^{a}	781^{b}	768^{b}	767^{a}

Results and Discussion

Calving date	Spring		Autumn	
Stocking rate	Medium	High	Medium	High
Body Weight (kg)	574	563	593	580
Body Condition Score	3	3	3	3
Milk yield (kg/day)	24.3^{a}	25.3^{b}	20.5^{c}	18.5^{d}
Milk protein (g/kg)	29^{a}	29^{a}	31^{b}	32^{c}
Milk fat (g/kg)	38^{ac}	37^{b}	37^{ab}	40^{c}
Milk urea content (mg/kg)	192^{ab}	185^{b}	224^{a}	212^{a}

Conclusions

- **The high stocking rate** and low daily herbage allowance had a positive effect on the sward utilisation by dairy cows.
- **Increasing the stocking rate** also reduce the substitutive effects of supplementation and achieve a better grass and milk quality.

Acknowledgements

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Thank you very much
for your attention.
Questions?????